Check List the journal of biodiversity data

NOTES ON GEOGRAPHIC DISTRIBUTION

Check List 11(2): 1573, February 2015 doi: http://dx.doi.org/10.15560/11.2.1573
ISSN 1809-127X © 2015 Check List and Authors

Distribution of *Promops davisoni* Thomas, 1921 (Chiroptera: Molossidae) in Peru with a new record and southward range extension

Marisel Flores Quispe[1, 4*], **Giüseppy Calizaya Mamani**[1, 4], **Víctor Pacheco**[1, 2] and **Giovanni Aragón Alvarado**[3, 4]

1 Universidad Nacional Mayor de San Marcos, Museo de Historia Natural, Departamento de Mastozoología, Apartado 14-0434, Lima-14, Perú
2 Universidad Nacional Mayor de San Marcos, Facultad de Ciencias Biológicas, Lima, Perú
3 Universidad Nacional Jorge Basadre Grohmann, Facultad de Ciencias, Avenida Miraflores s/n. Tacna, Tacna, Perú
4 Programa de Conservación de Murciélagos del Perú (PCMP) sede Tacna, Perú.
* Corresponding author: E-mail: fq.marisel@gmail.com

Abstract: *Promops davisoni* is a poorly known insectivorous bat represented by fewer than two dozen specimens in collections. These species are endemic from the Andean western slopes of Ecuador and Peru where it is known from the Mongoya River, province of Manabí, central Ecuador to the Santuario Nacional Lagunas de Mejia, Arequipa department, southwestern Peru. We report a new record of *P. davisoni* from Pampa Alta, Tacna department, Peru. This new specimen documents a 125 km range extension and the southernmost record of *P. davisoni* from Peru.

Key words: bats, new record, Molossidae, Tacna, Peru

The family Molossidae is represented by 11 genera and 39 species in the New World (Simmons 2005; Eger 2008; Baker et al. 2009; Gregorin and Chiquito 2010; Medina et al. 2014), of which 29 species have been reported from Peru (Pacheco et al. 2009; Gregorín and Chiquito 2010; Medina et al. 2012; Díaz 2011; Medina et al. 2014). *Promops* Gervais, 1855 is a molossid genus widely distributed in Central and South America, where three species are currently recognized (Gregorin and Chiquito 2010): *Promops centralis* Thomas, 1915; *Promops nasutus* Spix, 1823; and *Promops davisoni* Thomas, 1921. Members of the genus *Promops* are elusive and rare insectivorous bats with few specimens available in museum collections and scarce information regarding to its natural history (Freeman 1981; Peters et al. 2002). The taxonomic history of *P. davisoni* is complex being mostly treated as a synonym or subspecies of *P. centralis* and/or *P. nasutus* until its revision by Gregorin and Chiquito (2010) who recognized it as a valid species. Furthermore, Gregorin and Chiquito (2010) restrict the distribution of *P. davisoni* to localities on the west of the Andes from central Ecuador to central Peru and found it to be allopatric from other species of the genus. The holotype of *P. davisoni* (BM 21.5.21.1) is deposited in the British Museum of Natural History, London, UK (BM) and was collected near Lima (Thomas 1921), other Peruvian specimens of *P. davisoni* are deposited in the following collections: American Museum of Natural History (AMNH); Colección de Mastozoología, Centro de Ecología y Biodiversidad, Lima, Peru (CEBIOMAS); Field Museum of Natural History (FMNH); Museo Argentino de Ciencias Naturales (MACN); Museo de Historia Natural de la Universidad Nacional Mayor de San Marcos (MUSM); Museo de Historia Natural de la Universidad Nacional San Agustín de Arequipa (MUSA); National Museum of Natural History, and Smithsonian Institution (NMNH). Ortiz de la Puente (1951) reported this species from Talara in Piura department (FMNH 54948, 54949, and 54950), and from Barranco (MUSM 232), Chosica (MUSM 229), Miraflores (MUSM 230) and Matucana (MUSM 3054) in Lima department. Southernmost record of this species in Peru were reported by Velásquez (1992) from Ica department, and Zeballos et al. (2001) from the Santuario Nacional Lagunas de Mejía in Arequipa department (as *P. centralis*) (this specimen is deposited in MUSA) although, these last two records were not considered by Gregorin and Chiquito (2010). Pacheco et al. (2009) in the last updated list of Peruvian mammals highlighted the occurrence of *P. davisoni* in the Peruvian coast (as *P. nasutus*) based on two specimens from Lima and Piura (MUSM 229, 754). Recently Velazco et al. (2013) collected this species from Talara in Piura department (CEBIOMAS 222), in addition to finding remains in owl pellets of

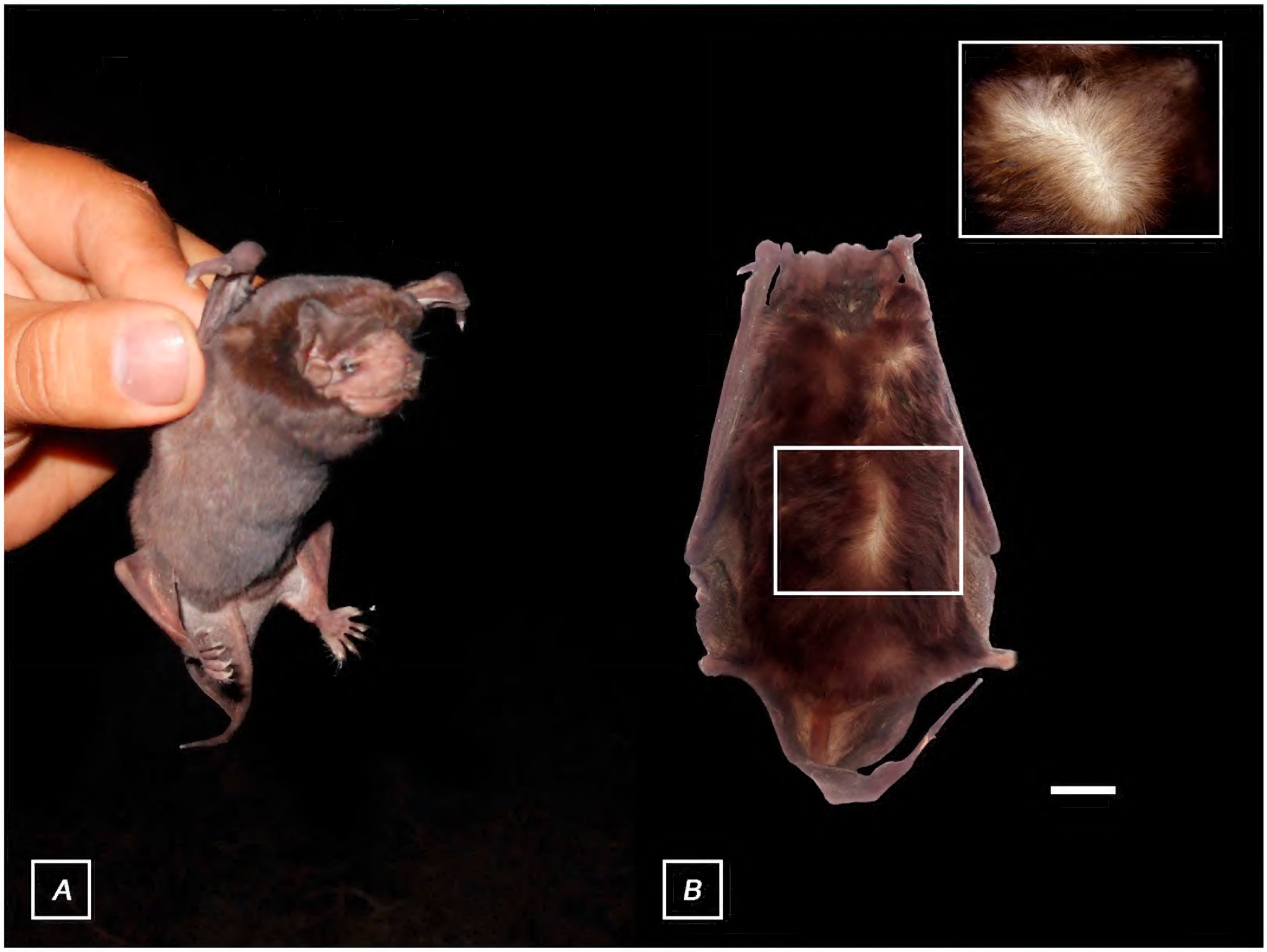

Figure 1. Specimen of *Promops davisoni* (MUSM 42359) collected in Pampa Alta, Ite, Jorge Basadre, Tacna, Peru. A. Live adult female after being captured with a mist net; B. Characteristics of pelage (dorsal view), a clear basal band that extends about half length of each hair is observed. Scale bar: 1 cm. Photographs by Marisel Flores.

Tyto alba (Aves, Strigiformes, Tytonidae). In this study, we report the first record of *P. davisoni* for Tacna department, Peru and a southward extension from its known geographical distribution.

Our new specimen of *P. davisoni* (MUSM 42359) was an adult female captured at Pampa Alta, district of Ite, province of Jorge Basadre, Tacna department, Peru (17°51′47.3″ S, 070°58′10.4″ W; 162 m, Figure 1). Pampa Alta is located in the Valley of Locumba, one of the three most important valleys in Tacna department. Pampa Alta is surrounded by large desert areas, gullies, and dry riverbeds with abundant xeric vegetation (Vizcarra 2010). To the west lies the Pacific Ocean and the Ite wetlands, a 12 km long artificial wetlands produced from the deposition of mine tailings on the beach and the expansion of the agricultural frontier (Pulido and Tabilo-Valdivieso 2001). The specimen of *P. davisoni* was collected using mist nets by Marisel Flores (MFQ 008) over an agricultural reservoir during a field expedition carried out on April 6 2013 (permit No. 081-2013-AG-DGFFS-DGEFFS) during dry season (Figure 2). It was preserved in alcohol with the skull removed and deposited in the mammal collection of the Museo de Historia Natural de la Universidad Nacional Mayor de

Figure 2. Surroundings of Pampa Alta locality and Agricultural reservoir where *Promops davisoni* (MUSM 42359) was collected. Photograph by Giüseppy Calizaya.

Figure 3. Ventral, dorsal and lateral views of the skull of *Promops davisoni* (MUSM 42359). Scale bar: 5 mm.

San Marcos (Figure 3). The specimen was compared with seven MUSM specimens of *P. davisoni* from northern and central of Peru (Appendix 1). Other insectivorous bats known to occur at Pampa Alta and in the Locumba valley include *Amorphochilus schnablii, Histiotus macrotus, H. montanus, Mormopterus kalinowskii, Myotis atacamensis*, and *Tadarida brasiliensis* (Aragón and Aguirre 2014). In addition to this new record, we examined the feces of our specimen using a stereomicroscope with 40× magnification; the feces were previously disaggregated using distilled water and were preserved in alcohol.

Based on the original description and reanalysis of the holotype made by Thomas (1921) and Gregorin and Chiquito (2010) respectively, the specimen MUSM 42359 presents all diagnostic characters of the species: the dorsal pelage is dark brown at the hair tips giving it a dark appearance, whereas the basal part of the dorsal fur is whitish, forming a clear band that extends about half of the length of each hair; lighter ventral fur that contrast with the dorsal pelage; the forearm length (FA = 50.0 mm) is within the range of the species (47.6–52.0 mm) and greatest length of skull (GLS = 18.25 mm) which is close to the proposed range (GLS = 18.7-20.2 mm) for this species. The external measurements of our specimen are: TL (total body length) = 122 mm; T (tail length) = 58 mm; HF (length of hind foot) = 8 mm; E (ear length) = 14.5 mm; Wt (total weight) = 50 g. Other measurements of MUSM 42359 (condyloincisive length, CIL; postorbital breadth, POB; maxillary toothrow length, C-M; upper molar breadth, M-M; upper canine breadth, CC; zygomatic breadth, ZB; mastoid breadth, MAB; braincase breadth, BCB; greatest length of mandible, GLM; lower toothrow length, Cm; length of forearm, FA; total length of third metacarpal, III MET; total length of fourth metacarpal, IV MET; total length of fifth metacarpal, V MET) are provided in Table 1 for comparison with other MUSM specimens and the material examined by Gregorin and Chiquito (2010).

In comparison with other specimens of *P. davisoni* of northern and central Peru, our specimen (MUSM 42359) is smaller, which could indicate a latitudinal variation (clinal variation) of the species. This variation in size along a latitudinal gradient also has been observed in *P. centralis* with specimens from northern latitudes (Central America) being larger than those from southern latitudes (Argentina). The other examined specimens of *P. davisoni* (MUSM 230, 231, 232, 3054, and 6654), including the specimens previously reviewed by Pacheco et al. (2009) (MUSM 229, 754), show a slight decreasing in measurement ranges at the external and craniodental level (Table 1). This could reinforce the presence of a clinal variation in *P. davisoni* with specimens from northern distributions being larger than those from southern distributions; however, this possibility requires the analysis of more samples from southern Peru. Gregorin and Chiquito (2010) defined that the dorsal pelage of *P. davisoni* is light or cinnamon brown but the dorsal pelage in MUSM 42359 is dark brown. This observation strengthens the variability of this diagnostic character in some specimens and is the reason why this species was previously synonymized with *P. centralis* (Koopman 1978; Ascorra et al. 1993; Pacheco et al. 1995; Eger 2008) or *P. nasutus* (Genoways and Williams 1979; Pacheco et al. 2009). The MUSM 42359 represents the southernmost record of *P. davisoni*, extending the known geographic range of the species about 125 km to the south (from the Santuario Nacional Lagunas de Mejía in Arequipa department; Zeballos et al. 2001), and the first record of the genus and species for Tacna department (Figure 4). Thus, this new record increases the bat diversity of Tacna department to nine species (Aragón and Aguirre 2014). In addition in feces revision of MUSM 42359 we found scales, eyes, proboscis, and legs of moths (Lepidoptera) (Figure 5). *P. davisoni* probably also occurs in northern

Table 1. Measurements of the new record from Peru of *Promops davisoni* (MUSM 42359), specimens reviewed in this study and specimens from Ecuador and Peru reviewed by Gregorin y Chiquito (2010).

Measurement	MUSM 42359	This Study Mean ± SD (range) n	Gregorin & Chiquito (2010) Mean ± SD (range) n
GLS	18.25	18.63 ± 0.35 (18.29–19.24) 7	19.5 ± 0.4 (18.7–20.2) 17
CIL	16.58	17.25 ± 0.45 (16.64–17.62) 6	18.1 ± 0.5 (17.3–19.0) 17
POB	3.71	3.96 ± 0.11 (3.83–4.12) 7	3.9 ± 0.1 (3.7–4.2) 17
C-M	6.86	7.14 ± 0.22 (6.87–7.41) 7	7.1 ± 0.2 (6.9–7.4) 17
M-M	8.29	8.43 ± 0.54 (7.40–9.00) 7	8.6 ± 0.2 (8.3–9.0) 17
CC	4.55	4.80 ± 0.17 (4.52–4.96) 7	4.8 ± 0.2 (4.5–5.1) 17
ZB	11.14	11.53 ± 0.43 (10.98–12.06) 6	11.4 ± 0.3 (11.0–12.0)17
MAB	10.10	10.28 ± 0.26 (9.90–10.57) 7	11.0 ± 0.2 (10.7–11.3) 17
BCB	8.04	8.26 ± 0.40 (7.54–8.64) 6	9.6 ± 0.1 (9.4–9.9) 17
GLM	12.64	12.73 ± 0.31 (12.33–13.20) 7	12.9 ± 0.3 (12.2–13.7) 17
Cm	7.81	8.08 ± 0.25 (7.66–8.33) 7	8.0 ± 0.5 (7.5–9.9) 17
FA	50	49.73 ± 1.12 (47.56–50.80) 6	49.5 ± 1.1 (47.6–52.0) 23
III MET	51.88	—	52.5 ± 1.4 (48.8–54.7) 24
IV MET	49.54	—	50.5 ± 1.6 (46.3–53.0) 24
V MET	31.35	—	32.6 ± 1.2 (30.4–34.5) 24

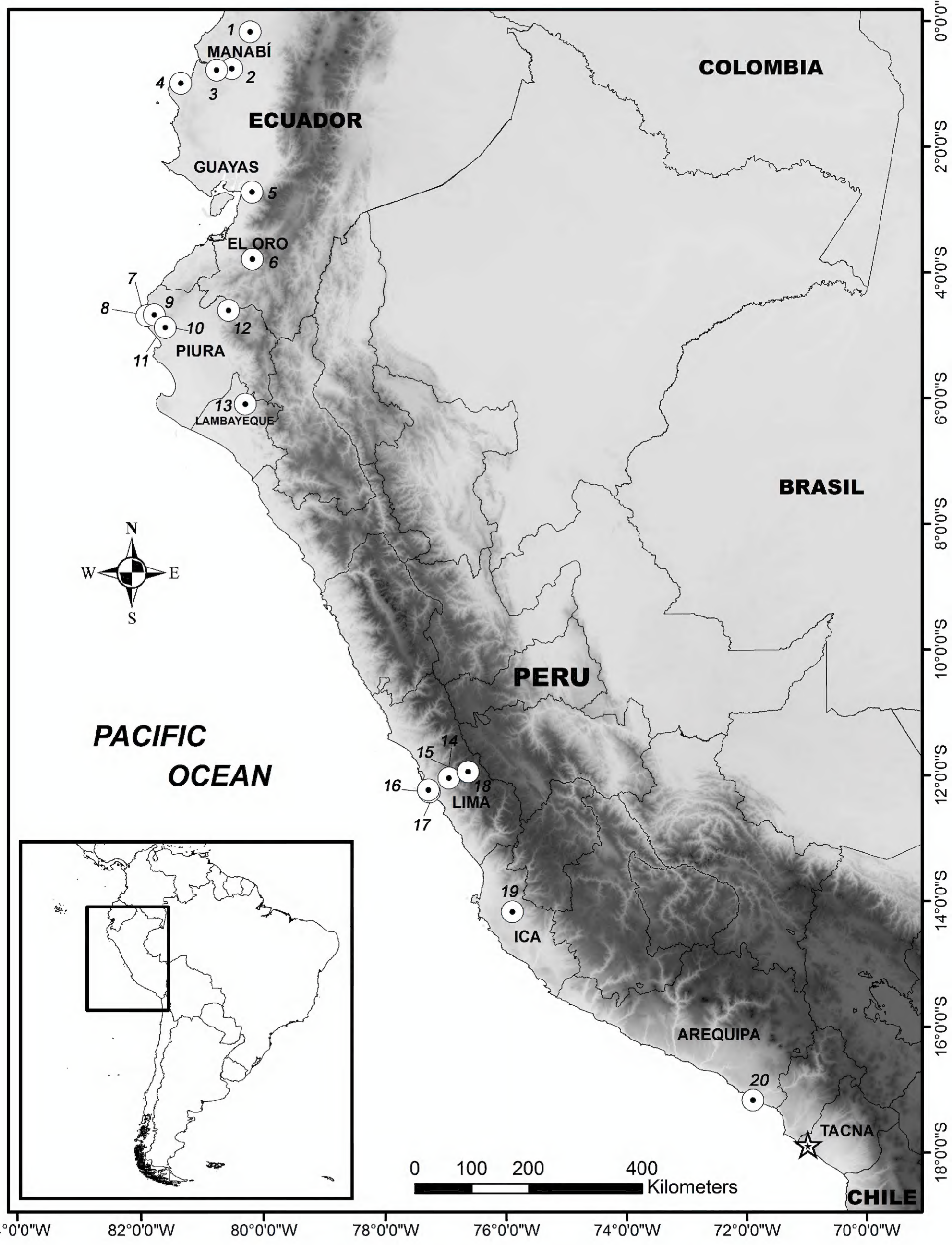

Figure 4. Geographic distribution of *Promops davisoni* in the Andean western slopes in Ecuador and Peru (⊙) including the southernmost record from Tacna (★) (MUSM 42359). Numbers indicate all localities previously reported by Ortiz de la Puente (1951), Velásquez (1994), Zeballos et al. (2001), Pacheco et al. (2009), Gregorin and Chiquito (2010), and Velazco et al. (2013) and correspond to data in Appendix 1.

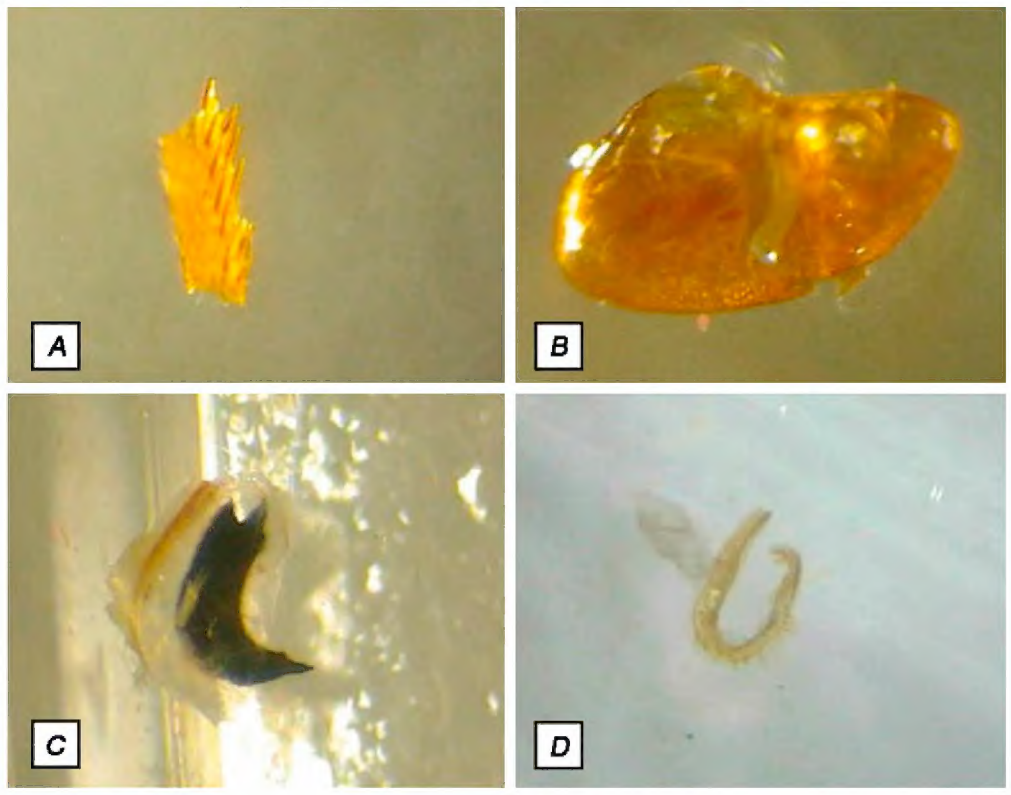

Figure 5. Lepidoptera remains found in feces of MUSM 42359. A. Legs; B. Scales; C. Eyes; D. Proboscis.

Chile, where habitats are very similar to those in Tacna department. The future use of high mist nets, acoustic surveys, and searching for roosts in crevices, caves, and buildings seems certain to increase our knowledge about the occurrence, natural history, and population status of bats in this still poorly known region.

ACKNOWLEDGEMENTS

We thank Carlos Jiménez, Sandra Velazco, Edith Arias, Wendy Calderón, Líz Huamaní, Anthony Almeyda, Jaime Pacheco and Klauss Cervantes (Departamento de Mastozoología del Museo de Historia Natural, Universidad Nacional Mayor de San Marcos) for their comments and suggestions in the development of this work. Dr. Robert S. Voss (American Museum of Natural History) for his suggestions and review of an earlier version of this manuscript. We also thank Gandhy Portugal, Marcela Oversluijs, Josmell Ticona, Néstor Cáceres, Julissa Naquiche, Natham Smedley and the members of the Programa de Conservación de Murciélagos del Perú – Sede Tacna (PCMP) for their great support in the fieldwork without which it would not have been possible.

LITERATURE CITED

Aragón, G. and M. Aguirre. 2014. Distribution of bats in the Tacna region (Peru). Idesia 32(1): 119–127. doi: 10.4067/S0718-34292014000100015

Ascorra, C.F., D.L. Gorchov and F. Cornejo. The bats from Jenaro Herrera, Loreto, Peru. Mammalia 57(4): 533–552. doi: 10.1515/mamm.1993.57.4.533

Baker, J., M.M. McDonough, V.J. Swier, P.A. Larsen, J.P. Carrera and L.K. Ammerman. 2009. New species of bonneted bat, genus Eumops (Chiroptera: Molossidae) from the lowlands of western Ecuador and Peru. Acta Chiropterologica 11(1): 1–13. doi: 10.3161/150811009X465659

Díaz, M. 2011. New records of bats from the northern region of the Peruvian Amazon. Zoological Research 32(2): 168–178. doi: 10.3724/SP.J.1141.2011.02168

Eger, J.L. 2008. Family Molossidae; pp. 399–440, in: A.L. Gardner (ed.). Mammals of South America: marsupials, xenarthrans, shrews, and bats. Chicago: The University of Chicago Press.

Freeman, P.W. 1981. A multivariate study of the family Molossidae (Mammalia, Chiroptera): Morphology, ecology, evolution. Fieldiana, Zoology 7: 1–173. doi: 10.5962/bhl.title.3128

Genoways, H.H. and S.L. Williams. 1979. Records of bats (Mammalia: Chiroptera) from Suriname. Annals of the Carnegie Museum 48: 323–355.

Gregorin, R. and E.A. Chiquito. 2010. Revalidation of *Promops davisoni* Thomas (Molossidae). Chiroptera Neotropical 16(1): 648–660. https://chiroptera.unb.br/index.php/cn/article/view/54/53.pdf

Koopman, K.F. 1978. Zoogeography of Peruvian bats with special emphasis on the role of the Andes. American Museum Novitates 2651: 1–33. http://hdl.handle.net/2246/2965

Medina, C.E., A. Pari, W. Delgado, H.T. Zamora, H. Zeballos and K. Pino. 2012. First occurrence of *Eumops patagonicus* (Chiroptera: Molossidae) and range expansion of the geographic distribution of *E. hansae*, in Peru. Mastozoología Neotropical 19(2): 345–351. http://www.scielo.org.ar/pdf/mznt/v19n2/v19n2a17.pdf

Medina, C.E., R. Gregorin, H. Zeballos, H.T. Zamora and L.M. Moras. 2014. A new species of *Eumops* (Chiroptera: Molossidae) from southwestern Peru. Zootaxa 3878(1): 019–036. doi: 10.11646/zootaxa.3878.1.2

Ortiz de la Puente D., J. 1951. Estudio monográfico de los quirópteros de Lima y alrededores. Publicaciones del Museo de Historia Natural "Javier Prado", Universidad Nacional Mayor de San Marcos 7: 1–48.

Pacheco, V., H. de Macedo, E. Vivar, C. Ascorra, R. Arana-Cardó and S. Solari. 1995. Lista anotada de los mamíferos peruanos. Occasional Papers in Conservation Biology 2: 1–35

Pacheco, V., R. Cadenillas, E. Salas, C. Tello and H. Zeballos. 2009. Diversidad y endemismo de los mamíferos del Perú. Revista Peruana de Biología 16(1): 005–032. http://www.scielo.org.pe/pdf/rpb/v16n1/a02v16n1.pdf

Peters, S.L., B.K. Lim and M.D. Engstrom. 2002. Systematics of dog-faced bats (*Cynomops*) based on molecular and morphometric data. Journal of Mammalogy 83: 1097–1101. doi: 10.1644/1545-1542(2002)083<1097:SODFBC>2.0.CO;2

Pulido, V. and E. Tabilo-Valdivieso. 2001. Costas del Perú y norte de Chile; in: P. Canevari, I. Davidson, D. Blanco, G. Castro and E. Bucher (eds.) Los humedales de América del Sur. Una agenda para la conservación de la biodiversidad y las políticas de desarrollo. Accessed at http://lac.wetlands.org/Publicaciones/Nuestraspublicaciones/tabid/3079/mod/1570/articleType/ArticleView/articleId/2212/Los-Humedales-de-Amrica-del-Sur.aspx, 20 December 2013.

Simmons, N.B. 2005. Order Chiroptera; pp. 159–174, in: D.E. Wilson and D.M. Reeder (eds.). 2005. Mammals species of the world: a taxonomic and geographic reference, 3rd edition. Baltimore: Johns Hopkins University Press.

Thomas, O. 1921. A new bat of the genus *Promops* from Peru. Annals and Magazine of Natural History 9(8): 61–63. doi: 10.1080/00222932108632568

Velazco, P.M., R. Cadenillas, O. Centty, L. Huamaní and H. Zamora. 2013. New records of *Platalina genovensium* (Chiroptera, Phyllostomidae) and *Tomopeas ravus* (Chiroptera, Molossidae). Mastozooloogía Neotropical 20(2): 425–434. http://www.scielo.org.ar/pdf/mznt/v20n2/v20n2a17.pdf

Vizcarra, J. K. 2010. New ornithological records in Ite wetlands and surroundings, Tacna, Peru. The Biologist 8: 1–20. http://sisbib.unmsm.edu.pe/bvrevistas/biologist/v08_n1/pdf/a01v8n1.pdf

Zeballos, H., V. Pacheco and L. Baraybar. 2001. Diversidad y conservación de los mamíferos de Arequipa, Perú. *Revista Peruana de Biología* 8(2): 94–104. http://sisbib.unmsm.edu.pe/bvrevistas/biologia/v08_n2/diver_conser.htm

Authors' contribution statement: MFQ and GCM collected the data and wrote the text, MFQ, GCM and VPT made the data analysis, GCM and GAA made the illustrations, VPT and GAA conducted the research.

Received: October 2014
Accepted: January 2015
Editorial responsibility: Paúl M. Velazco

APPENDIX 1

Specimens examined. The specimens examined in this study are marked with an asterisk and the specimens revised by Ortiz de la Puente (1951), Velásquez (1994), Zeballos et al. (2001), Pacheco et al. (2009), Gregorin and Chiquito (2010), and Velazco et al. (2013) are indicated with a superscript numbers (1, 2, 3, 4, 5 and 6 respectively). Numbers in parentheses indicate all localities records of *P. davisoni* (see Figure 4).

Promops davisoni. ECUADOR: (1) Manabí, Mongoya, 00°10′00.00″ S, 079°37′60.00″ W (FMNH 53543)[5]; (2) Manabí, Río de Oro (AMNH 34300)[5]; (3) Manabí, La Papaya, 00°45′49.10″ S, 080°09′16.38″ W (FMNH 53510)[5]; (4) Manabí, Manta, Río de Oro (34382)[5]; (5) Guayas, Naranjal, Bucay (AMNH 61481)[5]; (6) El Oro, Portovelo (AMNH 60532)[5]. PERU: (7) Piura, Talara, Valle de Pariñas, 04°33′59.00″ S, 081°09′32.00″ W (FMNH 54948)[1]; (8) Piura, Talara, Valle de Pariñas 04°33′59.00″ S, 081°09′32.00″ W (FMNH 54949, 54950)[1,5]; (9) Piura, Talara, La Brea, 12.9 km N de Tamarindo 04°45′59.10″ S, 080°59′29.50″ W (CEBIOMAS 222)[6]; (10) Piura (MUSM 754*)[4]; (11) Piura (NMNH 179330, 179331)[5]; (12) Piura, Suyo (MACN 16696)[5]; (13) Lambayeque, Olmos, 05°58′60.00″ S, 079°46′00.00″ W (FMNH 81170-79)[5]; (14) Lima, Lima, Lurigancho, Chosica (BM 21.5.21.1, 21.5.21.2)[5]; (15) Lima, Lima, Lurigancho, Chosica, 11°56′06.40″ S, 076°42′06.71″ W (MUSM 229*)[1,4]; (16) Lima, Lima, Miraflores, Miraflores, 12°07′00.73″ S, 077°01′55.81″ W (MUSM 230*)[1]; (17) Lima, Lima, Barranco, Barranco, 12°08′50.14″ S, 077°00′59.98″ W (MUSM 231*, 232*)[1]; (18) Lima, Huarochirí, Matucana 11°50′40.43″ S, 076°23′10.02″ W (MUSM 3054*)[1]; (19) Ica, Valle de Ica (the current location of this specimen is unknown)[2]; (20) Arequipa, Mejía (MUSA)[3]; Lima, Lima (MUSM 6654*); Tacna, Jorge Basadre, Ite, Pampa Alta, 17°51′47.30″ S, 070°58′10.40″ W (MUSM 42359*).